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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/541,417	07/01/2005	Alexander Stenger	DE 030009	6714

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EXAMINER

SINGH, RAMNANDAN P

ART UNIT	PAPER NUMBER
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2614

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/24/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/541,417	STENGER, ALEXANDER	
	Examiner	Art Unit	
	Ramnandan Singh	2614	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 July 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on Jul. 01, 2005 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date (i) Jul. 01, 2005, (ii) May 30, 2006. | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d) on Jul. 01, 2005, which papers have been placed of record in the file.

Drawings

2. The drawings are objected to because Figures 1 thru 6 do not show legends explaining the reference numerals used in the figures. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

3. Claim 1 is objected to because of the following informalities: Claim 1 recites the limitation "echo filter (50;52;52)" in lines 11-12. This is in error. Because "52" appears twice. Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claim 6 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 6 recites the limitation "a linear and/or adaptive filter" in line 2. It is unclear whether it claims a linear or adaptive filter.

6. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

7. Claim 12 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claim 12 recites the limitation "A computer program with computer programming means" in line 1. In this context, Applicant has failed to supply either the computer program code or the flowcharts describing functions to be executed by the program code enabling one of ordinary skill in the art to program the functions.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 1-4, 6, 9-12 are rejected under 35 U.S.C. 102(b) as being anticipated by Umemoto et al [US 5,636,323]

Regarding claim 1, Umemoto et al teach an echo canceling device (30), as shown in Figs. 1-2, for an arrangement for transmitting audio signals, especially uttered speech, comprising an echo filter for canceling echo (30), which echo filter (31) is arranged between an input channel (3) for receiving an electrical input signal and coming from a far end and leading to a converter (11) for converting an electrical signal into a first audio signal and an output channel (5) for outputting an electrical output signal and coming from an inverse converter (16) for converting a second audio signal back to an electrical signal and leading to a far end, characterized in that a high-pass

Art Unit: 2614

filter (6) is arranged in the input channel and has a cut-off frequency that is beyond the cut-off frequency of the high-pass behavior of the converter (11) before the echo filter (31) from the direction of the far end, and in that a limiting element (35) to limit the signal amplitude is arranged in the input channel (3) between the high-pass filter (6) and the echo filter (31), wherein the high pass filter is inherently present in the analog-to-digital (A/D) converter (6) [Figs. 1-2; col. 3, line 39 to col. 4, line 36; col. 5, lines 24-61]. For example, Eppler, Jr. et al [US 5,600,714] shows that a high-pass filter is associated with an A/D converter [col. 4, lines 61 to col. 5, line 10].

Claim 11 is essentially similar to claim 11 and is rejected for the reasons stated above.

Regarding claim 2, Umemoto et al further teach the device characterized in that the characteristic of the limiting element (35) is determined by a function that has a first constant), a proportional and a second constant section and the transitions between these sections are soft, in particular constant and constantly differentiable [Figs. 4, 6A-6B, 7A-7B; col. 6, line 62 to col. 9, line 55].

Regarding claims 3-4, the limitations are shown above in claim 2.

Regarding claim 6, Umemoto et al further teach the device characterized in that the echo filter (31) is a linear adaptive filter [Figs. 2-3; col. 5, line 24 to col. 6, line 61].

Regarding claim 9, Umemoto et al further teach an arrangement for receiving and transmitting audio signals comprising an echo canceling device shown in Figs. 1-2, a converter (11) for converting an electrical signal received on an input channel into a first audio signal, in particular with a D/A converter (11) to convert a digital signal into an analog signal, an amplifier (12) for amplifying the analog signal and a loudspeaker (13) for converting the amplified signal into the first audio signal, and an inverse converter (16) for converting a second audio signal back into an electrical signal, especially with a microphone (14) for converting the second audio signal into an analog electrical signal, an amplifier (15) for adapting the analog electrical signal to an amplitude range of an A/D converter and an A/D converter (16) for converting the adapted signal into a digital signal to be passed on to an output channel [Figs. 1-2; col. 3, line 39 to col. 5, line 61]..

Regarding claim 10, Umemoto et al further teach the device characterized in that the arrangement is a mobile telephone, a cordless telephone, a radio set or a hands-free device [col. 1, lines 5-37; col. 10, lines 11-30].

Regarding claim 12, Umemoto et al further teach a computer program with computer programming means to cause a computer to execute the steps of the method as claimed in claim 11 when the computer program is executed on a computer [col. 5, lines 25-34; col. 7, line 63 to col. 8, line 4; col. 9, lines 46-55].

Art Unit: 2614

10. Claims 1, 11 are rejected under 35 U.S.C. 102(b) as being anticipated by Eppler, Jr. et al [US 5,600, 714].

Regarding claim 1, Eppler, Jr et al teach an echo canceling device, as shown in Fig. 1, for an arrangement for transmitting audio signals, especially uttered speech, comprising an echo filter (46) for canceling echo, which echo filter is arranged between an input channel for receiving an electrical input signal and coming from a far end and leading to a converter (54) for converting an electrical signal into a first audio signal and an output channel for outputting an electrical output signal and coming from an inverse converter (42) for converting a second audio signal back to an electrical signal and leading to a far end, characterized in that band-pass filter (28) that includes a function of a high-pass filter is arranged in the input channel and has a cut-off frequency that is beyond the cut-off frequency of the high-pass behavior of the converter (54) before the echo filter (46) from the direction of the far end, and in that a limiting element (30) to limit the signal amplitude is arranged in the input channel between the high-pass filter (i.e. band-pass filter 28) and the echo filter (46) [Figs. 1-2; col. 4, line 54 to col. 6, line 36].

Claim 11 is essentially similar to claim 11 and is rejected for the reasons stated above.

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claims 7-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Umemoto et al as applied to claim 1 above, and further in view of McLaughlin et al [US 20020154761 A1].

Regarding claim 7, although Umemoto et al teach an analog-to-digital (A/D) Converter, they do not teach expressly a frequency response characteristics of a high-pass filter.

McLaughlin et al teach high-pass filter (50) has a 3 dB cut-off frequency of approximately 0.1-2 kHz, in particular of about 0.2-1 kHz. [Figs. 4, 7; Para: 0016; 0077].

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to dynamically enhance the performance of a speakerphone system by filtering a received far-talker signal in a manner which is preferential to passing high audio frequencies and adjustable with regard to passing audio frequency within a low frequency band [McLaughlin et al; Para 0012].

Regarding claim 8, McLaughlin et al further teach the device characterized in that the 3 dB cut-off frequency of the high-pass filter (50) is greater by approximately a factor of 2 to 10, in particular by a factor of approximately 5, than the 3 dB cut-off frequency of the converter comprising D/A (54) and amplifier (56) [Figs. 4, 7; Para: 0031-00320039; 0044-0045; 0059; 0075-0080].

13. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Umemoto et al as applied to claim 1 above, and further in view of Mueller [US 3,781,720].

Regarding claim 5, Umemoto et al do not teach expressly a limiter characterized by a hyperbolic tangent (tanh) function.

Mueller teaches limiter (31) whose characteristic (75) resembles the graph of the hyperbolic tangent (tanh) function [Figs. 1, 4; col. 6, lines 19-34].

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the teachings of Mueller with Umemoto et al in order to effectively balance leading and lagging echoes of a received signal in an adaptive filter [col. 1, lines 18-24].

Conclusion

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

(i) Hemkumar [US 6,282,176 B1] teaches using a peak-limiting automatic gain control (AGC) (TX 162) (RX 138) [Figs. 14A-4E; col. 5, lines 36-55]; and

(ii) Farrell et al [US 7,020,278 B2] teaches an improved non-linear process [Figs. 2, 5, 11A, 11B, 14].

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ramnandan Singh whose telephone number is (571) 272-7529. The examiner can normally be reached on M-TH (8:00-5:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Fan Tsang can be reached on 571-272-7547. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2614

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Ramnandan Singh
Examiner
Art Unit 2614

A handwritten signature in black ink, appearing to read 'RNS', with a long horizontal line extending from the bottom right of the signature.